What Is Claimed Is:

1. An optical communication system comprising:

N, where N is an integer, optical channels;

input means for inputting a single optical wavelength signal to each of said N optical channels;

N optical amplifiers, with each of said N optical channels including one of said N optical amplifiers; and

control means for operating each of said N optical amplifiers at a predetermined output power level.

2. The optical communication system according to Claim 1, wherein said control means operates each of said N optical amplifier at the predetermined output power level by operating each of said N optical amplifiers in a saturation mode.

3. The optical communication system according to Claim 2, wherein said control means comprises:

pump means for supplying an optical signal at a predetermined pumping power level to each of said N

optical amplifiers for operating each of said N optical amplifiers in the saturation mode.

4. The optical communication system according to Claim 3, wherein said pump means comprises N pumps, each of said N pumps being connected to a different one of said N optical amplifiers, with each of said N pumps supplying an optical signal at a predetermined pumping power to a one of the N optical amplifiers to which it is connected.

5. The optical communication system according to Claim 3, wherein said pump means comprises:

M pumps, where M is an integer and M<N, with each of said M pumps supplying an optical signal at a predetermined pumping power level; and

a MxN coupler for selectively coupling N of said M pumps to said N optical amplifiers, with at least one of said M pumps being a spare pump.

6. The optical communication system according to Claim 3, wherein said pump means comprises:

a shared pump means for supplying the optical signal at the predetermined power level to each of said N optical amplifiers.

7. The optical communication system according to Claim 6, wherein said shared pump means comprises:

a single optical pump for supplying an optical signal at the predetermined pumping power level; and

an optical splitter for applying the optical signal at the predetermined pumping power level from said single optical pump to each of said N optical amplifiers.

8. A wavelength division multiplexed optical communication system comprising:

input means for inputting N, where N is an integer, optical wavelength signals on a single optical transmission channel;

a demultiplexer for demultiplexing the input N optical wavelength signals onto N optical channels;

N optical amplifiers, with each of said N optical channels including one of said N optical amplifiers; and

control means for operating each of said N optical amplifiers at a predetermined output power level.

9. The wavelength division multiplexed optical communication system according to Claim 8, wherein said control means operates each of said N optical amplifiers at the predetermined output power level by operating each of said N optical amplifiers in a saturation mode.

10. The wavelength division multiplexed optical communication system according to Claim 9, wherein said control means comprises:

pump means for supplying an optical signal at a predetermined pumping power level to each of said N optical amplifiers for operating each of said N optical amplifiers in the saturation mode.

11. The wavelength division multiplexed optical communication system according to Claim 10, wherein said pump means comprises N pumps, each of said N pumps being connected to a different one of said N optical amplifiers, with each of said N pumps supplying an optical signal at a predetermined pumping power to a one of the N optical amplifiers to which it is connected.

12. The wavelength division multiplexed communication system according to Claim 10, wherein said pump means comprises:

M pumps, where M is an integer and M<N, with each of said M pumps supplying an optical signal at a predetermined pumping power level; and

a MxN coupler for selectively coupling N of said M pumps to said N optical amplifiers, with at least one of said M pumps being a spare pump.

13. The wavelength division multiplexed optical communication system according to Claim 10, wherein said pump means comprises:

a shared pump means for supplying the optical signal at the predetermined power level to each of said N optical amplifiers.

14. The wavelength division multiplexed optical communication system according to Claim 13, wherein said shared pump means comprises:

a single optical pump for supplying an optical signal at the predetermined pumping power level; and

an optical splitter for applying the optical signal at the predetermined pumping power level from said single optical pump to each of said N optical amplifiers.

15. The wavelength division multiplexed optical communication system according to Claim 8, further comprising:

a multiplexer for multiplexing the N optical wavelength signals on the N optical channels onto a single optical transmission output channel.

16. A wavelength division multiplexed optical communication system comprising:

first and second optical nodes connected back-to-back through a plurality of all optical channels in each of said first and second optical nodes, with each of said plurality of all optical channels in at least one of said first and second optical nodes including an optical amplifier for amplifying optical signals at different wavelengths; and

control means for operating each of said plurality of all optical amplifiers at a predetermined output power level.

17. The wavelength division multiplexed optical communication system according to Claim 16, wherein said control means operates each of said optical amplifiers at the predetermined output power level by operating each of said optical amplifiers in a saturation mode.

18. The wavelength division multiplexed optical communication system according to Claim 17, wherein said control means comprises:

pump means for supplying an optical signal at a predetermined pumping power level to each of said optical amplifiers for operating each of said optical amplifiers in the saturation mode.

19. The wavelength division multiplexed optical communication system according to Claim 18, wherein said pump means comprises N, where N is an integer, optical pumps, each of said N optical pumps being connected to a different one of said optical amplifiers, with each of said N optical pumps supplying an optical signal at a predetermined pumping power to a one of the optical amplifiers to which it is connected.

20. The wavelength division multiplexed optical communication system according to Claim 18, wherein said pump means comprises:

M pumps, where M is an integer and M<N, with each of said M pumps supplying an optical signal at a predetermined pumping power level; and

a MxN coupler for selectively coupling N of said M pumps to said optical amplifiers, with at least one of said M pumps being a spare pump.

21. The wavelength division multiplexed optical communication system according to Claim 18, wherein said pump means comprises:

a shared pump means for supplying the optical signal at the predetermined power level to each of said optical amplifiers.

22. The wavelength division multiplexed optical communication system according to Claim 21, wherein said shared pump means comprises:

a single optical pump for supplying an optical signal at a predetermined pumping power level; and

an optical splitter for applying the optical signal at the predetermined pumping power level from said single optical pump to each of said optical amplifiers.

23. The wavelength division multiplexed optical communication system according to Claim 16, wherein said first and second optical nodes are each optical line terminals.

24. The wavelength division multiplexed optical communication system according to Claim 16, wherein said first and second optical modes are each add-drop multiplexers.

25. An optical communication system comprising:

N, where N is an integer, optical channels;

input means for inputting a single optical wavelength signal to each of said N optical channels;

N optical amplifiers, with each of said N optical channels including one of said N optical amplifiers; and

control means for operating each of said N optical amplifiers in a saturation mode.

26. The optical communication system according to Claim 25, wherein said control means comprises:

pump means for supplying an optical signal at a predetermined pumping power level to each of said N

optical amplifiers for operating each of said N optical amplifiers in the saturation mode.

27. A wavelength division multiplexed optical communication system comprising:

first and second optical nodes connected back-to-back through a plurality of all optical channels in each of said first and second optical nodes, with each of said plurality of all optical channels in at least one of said first and second optical nodes including an optical amplifier for amplifying optical signals at different wavelengths; and

control means for operating each of said plurality of all optical amplifiers in a saturation mode.

28. The wavelength division multiplexed optical communication system according to Claim 27, wherein said control means comprises:

pump means for supplying an optical signal at a predetermined pumping power level to each of said

optical amplifiers for operating each of said optical amplifiers in the saturation mode.

29. A method of operating an optical communication system including N, where N is an integer, optical channels, with each such channel including an optical amplifier, comprising:

an input step of inputting a single optical wavelength signal to each of said N optical channels; and

a control step of operating each optical amplifier at a predetermined output power level.

30. The method according to Claim 29, wherein said control step operates each amplifier at the predetermined output power level by operating each amplifier in a saturation mode.

31. The method according to Claim 30, wherein said control step comprises:

a pumping step of supplying an optical signal at a predetermined pumping power level to each optical

amplifier for operating each amplifier in a saturation mode.

32. A method of operating an optical communication system including N, where N is an integer, optical channels, with each such channel including an optical amplifier, comprising:

an input step of inputting a single optical wavelength signal to each of said N optical channels; and

a control step of operating each optical amplifier in a saturation mode.

33. The method according to Claim 32, wherein said control step comprises:

a pumping step of supplying an optical signal at a predetermined pumping power level to each optical amplifier for operating each optical amplifier in the saturation mode.

34. A method of operating a wavelength division multiplexed optical communication system including N,

where N is an integer, optical channels, with each such channel including an optical amplifier, comprising:

an input step of inputting N optical wavelength signals on a single optical transmission path;

a demultiplexing step of demultiplexing the input N optical wavelength signals onto the N optical channels; and

a control step of operating each optical amplifier at a predetermined power level.

35. The method according to Claim 34, wherein said control step operates each amplifier at the predetermined power level by operating each amplifier in a saturation mode.

36. The method according to Claim 35, wherein said control step comprises:

a pumping step of supplying an optical signal at a predetermined pumping power level to each optical amplifier for operating each amplifier in the saturation mode.

37. A method of preventing lasing in a wavelength division multiplexed optical ring communication system having a plurality of nodes, with each of said plurality of nodes including N, where N is an integer, optical channels, with each such channel including an optical amplifier, comprising:

an input step of inputting a different optical wavelength signal to each of said N optical channels; and

a control step of operating each optical amplifier at a predetermined power level which the amplifier is constrained not to rise above,

wherein lasing is prevented when a wavelength of a given channel transverses the ring without being dropped, since the given channel is unable to rob power from another channel due to the output power level of each channel being constrained not to rise above the predetermined power level.

38. The method according to Claim 37, wherein said control step operates each amplifier at the predetermined output power level by operating each amplifier in a saturation mode.

39. The method according to Claim 38, wherein said control step comprises:

a pumping step of supplying an optical signal at a predetermined pumping power level to each optical amplifier for operating each amplifier in a saturation mode.

40. An optical communication system comprising:

an optical cross connect switch having a plurality of inputs and outputs, with said optical cross connect switch including a core having a plurality of inputs and outputs, with a plurality of input optical channels being included between the respective inputs of the optical cross connect switch and the inputs of the core, with a plurality of output optical channels being included between the respective outputs of the core and the outputs of the optical cross connect switch, with each of the plurality of optical channels in at least one of the plurality of input optical channels and the plurality of output channels including an optical amplifier for amplifying input optical signals; and

control means for operating each of the optical amplifiers at a predetermined output power level.

41. The optical communication system according to Claim 40, wherein said control means operates each of said optical amplifiers at the predetermined output power level by operating each of said optical amplifiers in a saturation mode.

42. The optical communication system according to Claim 41, wherein said control means comprises:

pump means for supplying an optical signal at a predetermined pumping power level to each of said optical amplifiers for operating each of said optical amplifiers in the saturation mode.

43. The optical communication system according to Claim 42, wherein said pump means comprises a plurality of optical pumps, each of said plurality of optical pumps being connected to a different one of said optical amplifiers, with each of said plurality of optical pumps being connected to a different one of

said optical amplifiers, with each of said plurality of optical pumps supplying an optical signal, at a predetermined pumping power to a one of the optical amplifiers to which it is connected.

44. The optical communication system according to Claim 42, wherein said pump means comprises:

M pumps, where M is an integer and M<N, with each of said M pumps supplying an optical signal at a predetermined pumping power level; and

a MxN coupler for selectively coupling N of said M pumps to said optical amplifiers, with at least one of said M pumps being a spare pump.

45. The wavelength division multiplexed optical communication system according to Claim 42, wherein said pump means comprises:

a shared pump means for supplying the optical signal at the predetermined power level to each of said optical amplifiers.

46. The optical communication system according to Claim 45, wherein said shared pump means comprises:

a single optical pump for supplying an optical signal at a predetermined pumping power level; and

an optical splitter for applying the optical signal at the predetermined pumping power level from said single optical pump to each of said optical amplifiers.